

**WHAT IS CLAIMED IS:**

1. A processing chamber for manufacturing a plasma display panel comprising a plurality of display cells, the processing chamber comprising:
  - a base plate;
  - 5 a gas distribution plate operable for coupling to the base plate via a first sealing element, wherein an inner cavity is formed between the base plate and the gas distribution plate; and
  - a gas flow tube mounted over an opening in the gas distribution plate and configured to fill the plurality of display cells of the plasma display panel assembly placed in the inner cavity with a gaseous mixture.
- 10 2. A processing chamber according to claim 1, wherein the gaseous mixture flows into the plurality of display cells via lateral sides of the plasma display panel assembly.
3. A processing chamber according to claim 1, wherein the gas flow tube
- 15 comprises a glass material.
4. A processing chamber according to claim 1, wherein the first sealing element is configured to hermetically seal the inner cavity between the base and gas distribution plates upon heating of the processing chamber to a first sealing temperature.
5. A processing chamber according to claim 4, wherein the first sealing
- 20 element comprises a crystallizing sealing material.

6. A processing chamber according to claim 1, wherein the first sealing element is an O-ring configured to hermetically seal the inner cavity between the base and gas distribution plates.

7. A processing chamber according to claim 1, wherein at least one of the  
5 base and gas distribution plates comprises a glass material.

8. A processing chamber according to claim 1, further comprising:  
a vacuum unit coupled to the gas flow tube and configured to remove gaseous  
impurities from the plurality of display cells.

9. A processing chamber according to claim 1, wherein the plasma display  
10 panel assembly comprises:  
a front substrate;  
a rear substrate operable for coupling to the front substrate by a second sealing  
element; and  
a plurality of display cells formed between the front substrate and the rear  
15 substrate, the display cells being delimited by partition walls, and the  
display cells including light-emitting layers configured to emit light of at  
least one color,  
wherein the second sealing element is configured to hermetically seal the front  
and rear substrates upon heating of the processing chamber to a second  
20 sealing temperature.

10. A method of filling a plurality of display cells of a plasma display panel  
with a gaseous mixture, the method comprising:

placing a plasma display panel assembly in an inner cavity of a processing chamber;

filling the inner cavity of the processing chamber with the gaseous mixture;

sealing the plasma display panel assembly inside the inner cavity of the

5 processing chamber; and

removing the plasma display panel assembly from the inner cavity of the processing chamber.

11. The process according to claim 10, wherein placing the plasma display panel in the inner cavity of the processing chamber further comprises:

10 placing the plasma display panel assembly between the base and distribution plates;

coupling a base plate and a gas distribution plate using a first sealing element to

form the inner cavity of the processing chamber; and

sealing the inner cavity between the base and distribution plates.

15 12. A method according to claim 11, wherein the first sealing element is an O-ring.

13. A method according to claim 11, wherein the first sealing element comprises a crystallizing sealing material and the inner cavity is sealed by heating the processing chamber to a first sealing temperature.

20 14. A method according to claim 13, wherein a front substrate and a rear substrate of the plasma display panel assembly are coupled together by a second sealing element;

the second sealing element is configured to hermetically seal the front and rear substrates upon heating of the processing chamber to a second sealing temperature; and  
the second sealing temperature is greater than the first sealing temperature.

5           15.     A method according to claim 13, wherein the gaseous mixture flows into a plurality of display cells formed between the front and rear substrates of the plasma display panel assembly via lateral sides of the plasma display panel assembly.

          16.     A method according to claim 10, further comprising:  
substantially evacuating gaseous impurities from the plasma display panel  
10           assembly before filling the inner cavity of the processing chamber with the gaseous mixture.

          17.     A method according to claim 10, wherein the gaseous mixture comprises at least one inert gas selected from the group consisting of Xenon (Xe), Neon (Ne), and Helium (He).

15

          18.     A plasma display panel comprising:  
a front substrate;  
a rear substrate coupled to the front substrate; and  
a plurality of display cells formed between the front substrate and the rear  
20           substrate, the display cells being delimited by partition walls, and the display cells including light-emitting layers configured to emit light of at least one color,

wherein the front and rear substrates are substantially flat and do not include a protrusion remaining from a tube that was operable to fill the plasma display panel with a gaseous mixture.

19. A plasma display panel including a plurality of display cells, the plasma display panel comprising a front substrate and a rear substrate, wherein the front and rear substrates do not include a protrusion, the plasma display panel made by a process comprising:

placing a plasma display panel assembly in an inner cavity of a processing chamber;

10 filling the inner cavity of the processing chamber with a gaseous mixture;

sealing the plasma display panel assembly inside the inner cavity of the processing chamber; and

removing the plasma display panel assembly from the inner cavity of the processing chamber.

15 20. The plasma display panel according to claim 19, wherein placing the plasma display panel in the inner cavity of the processing chamber further comprises:

placing the plasma display panel assembly between a base plate and a distribution plate;

coupling the base and distribution plates using a first sealing element to form the

20 inner cavity of the processing chamber; and

sealing the inner cavity between the base and distribution plates.

21. A plasma display panel according to claim 19, wherein the first sealing element is an O-ring.

22. A plasma display panel according to claim 19, wherein the first sealing element comprises a crystallizing sealing material and the inner cavity is sealed by heating the processing chamber to a first sealing temperature.

23. A plasma display panel according to claim 22, wherein  
5 a front substrate and a rear substrate of the plasma display panel assembly are coupled together by a second sealing element;  
the second sealing element is configured to hermetically seal the front and rear substrates upon heating of the processing chamber to a second sealing temperature; and  
10 the second sealing temperature is greater than the first sealing temperature.

24. A plasma display panel according to claim 22, wherein the gaseous mixture flows into a plurality of display cells formed between the front and rear substrates of the plasma display panel assembly via lateral sides of the plasma display panel assembly.

15 25. A plasma display panel according to claim 19, wherein the process further comprises:  
substantially evacuating gaseous impurities from the plasma display panel assembly before filling the inner cavity of the processing chamber with the gaseous mixture.

20 26. A plasma display panel according to claim 19, wherein the gaseous mixture comprises at least one inert gas selected from the group consisting of Xenon (Xe), Neon (Ne), and Helium (He).